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A Guide For Nurses And Respiratory Therapists In Cardiac Arrest Management

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Abstract

In-hospital cardiac arrest is a critical global health issue and a major cause of mortality in developed nations, with an estimated incidence of one to six events per 1,000 hospitalized patients. Immediate recognition and intervention, particularly through the initiation of cardiopulmonary resuscitation (CPR), are crucial for enhancing survival rates. Rapid response teams (RRTs) have been implemented as a key strategy to improve early detection and reduce mortality from in-hospital cardiac arrest. Nurses play a vital role in RRTs, providing critical care to acutely ill patients, upholding care quality, and training healthcare teams to identify clinical deterioration. However, the specific roles and contributions of nurses within these multidisciplinary teams remain underexplored. This review discusses the epidemiology, causes, management during and after cardiac arrest, factors influencing outcomes, prognostication, and strategies for quality improvement in adult in-hospital cardiac arrest. The global incidence and outcomes of in-hospital cardiac arrest vary across countries, with survival rates ranging from 13% to 30%. Cardiac etiologies account for approximately 50-60% of cases, while respiratory insufficiency is the second most frequent cause. Prevention of cardiac arrest through early identification of at-risk patients and rapid interventions is crucial. Treatment during cardiac arrest focuses on high-quality CPR, early defibrillation, and appropriate medication administration. Post-cardiac arrest management addresses the underlying cause, provides hemodynamic and respiratory support, and implements neuroprotective strategies. Numerous patient and event-related

characteristics influence clinical outcomes, with age, preexisting conditions, presenting rhythm, and duration of cardiac arrest being strong predictors. Prognostication remains challenging, and a comprehensive, multifaceted approach is recommended. Quality improvement initiatives, such as participation in national registries and adherence to performance measures, can enhance outcomes following in-hospital cardiac arrest.
Keywords: nurses, Cardiac Arrest, respiratory therapists

Introduction

Emergency situations within the hospital setting demand rapid, precise, and safe actions from healthcare providers. Cardiac arrest is among the most common emergencies in hospitals, primarily due to the rapid clinical deterioration of patients in intensive care units (ICUs) and hospital wards. Warning signs such as reduced oxygen saturation (< 80%), bradypnea (< 8 breaths per minute), and hypotension (systolic blood pressure < 80 mmHg) (Souza et al., 2019) enable the early identification of cardiac arrest and subsequent activation of the rapid response team (RRT). According to the World Health Organization/Pan American Health Organization, cardiovascular diseases are the leading cause of death, with an estimated 17.0 million fatalities annually worldwide (Pulze et al., 2019).

In addition to being a critical global health issue, in-hospital cardiac arrest is a major cause of mortality in developed nations, with approximately 800,000 cases annually reported in Europe and the United States. The incidence reported in the literature varies from one to six events per 1,000 hospitalized patients. In the United States, over 200,000 adults experience cardiac arrest in hospital settings. In Brazil, official statistics are lacking, and few studies have quantified the occurrence of cardiac arrest. Nevertheless, it is estimated that around 200,000 cases occur annually, with approximately half transpiring within hospital environments and the other half outside them.

Immediate recognition and intervention, particularly through the initiation of cardiopulmonary resuscitation (CPR), are critical to enhancing survival rates until the RRT arrives. The primary objective is to deliver immediate care to hospitalized patients displaying signs of clinical deterioration and requiring urgent intervention. The concept of RRT originated in Australia in 1991 and was introduced in the United States in 2004 following a campaign by the Institute for Healthcare Improvement, aimed at reducing in-hospital mortality through structural improvements and minimizing preventable adverse events. This campaign led most capable organizations to recommend implementing RRTs.

In 2015, the American Heart Association updated its guidelines on cardiac arrest, emphasizing the importance of recognizing and addressing clinical deterioration in diverse hospital contexts, alongside executing CPR. Consequently, RRTs were incorporated as the initial link in the chain of survival, termed "surveillance and prevention," for early detection and reduced mortality from cardiac arrest in hospital settings (Fischer et al., 2021).

In Latin American countries, RRT implementation has become a critical institutional strategy, considering the limited availability of ICU beds in public hospitals (Churpek & Edelson, 2015). Organizations such as the Joint Commission and the Institute for Healthcare Improvement advocate for RRTs in hospitals to improve healthcare quality, reduce morbidity and mortality rates, and minimize instances of cardiac arrest outside the ICU (Teuma Custo & Trapani, 2020). The ultimate goal is to prevent deaths among patients showing clinical instability, identified through early analysis of vital signs. Once activated, RRTs aim to evaluate the patient and determine the appropriate intervention within approximately five minutes. However, delayed activation, occurring in 21% to 56% of cases remains a significant challenge, leading to higher morbidity and mortality rates (Barwise et al., 2016).

There is no universal standardization in the composition and functioning of RRTs, which are often perceived as mobile intensive care services due to the complexity of care they provide to critically ill patients. In many cases of cardiac arrest, nurses are the first to recognize signs of patient deterioration. Consequently, they must possess both technical expertise and scientific knowledge to facilitate immediate decision-making.

Nurses serving on RRTs provide critical care to acutely ill patients throughout the hospital, uphold the safety and quality of care for clinically deteriorating patients, train healthcare teams to identify clinical deterioration, and proactively assess at-risk patients. Despite the global adoption of RRTs, the specific roles and contributions of nurses within these multidisciplinary teams remain underexplored (Rincón-López et al., 2021).

PDF

In-hospital cardiac arrest is an acute medical event that can affect any hospitalized patient. For clinical care, research, and guideline development purposes, it is most commonly defined as the cessation of circulation that necessitates resuscitation through chest compressions, defibrillation, or both.

Historically, in-hospital cardiac arrest has been viewed as a condition with such poor outcomes that resuscitation was often considered unwarranted. While outcomes remain suboptimal, recent evidence suggests notable improvements over the past two decades (Benjamin et al., 2018). This improvement may be attributed, in part, to greater recognition of how clinical management influences outcomes in patients experiencing in-hospital cardiac arrest and cardiac arrest generally. Despite growing interest, in-hospital cardiac arrest remains relatively underexplored compared to out-of-hospital cardiac arrest and other cardiovascular conditions like stroke and myocardial infarction. For instance, a systematic review of all randomized clinical trials on cardiac arrest (n = 92) involving at least 50 patients conducted between 1995 and 2014 found that only 4 trials (4%) focused exclusively on in-hospital cardiac arrest (Sinha et al., 2016). This review discusses adult in-hospital cardiac arrest, including its epidemiology, causes, management during and after cardiac arrest, factors influencing outcomes, prognostication, and strategies for quality improvement.

Incidence and Outcomes

The global incidence of in-hospital cardiac arrest in adults has not been extensively studied, with most data derived from the American Heart Association's Get With The Guidelines-Resuscitation (GWTG-R) registry and the National Cardiac Arrest Audit maintained by the Resuscitation Council (UK) and the Intensive Care National Audit and Research Centre. Data from the GWTG-R registry between 2003 and 2007 estimated the annual incidence of in-hospital cardiac arrest in the United States at 211,000 cases, equating to roughly 6 to 7 events per 1,000 hospital admissions. From 2008 to 2017, this incidence rose to approximately 292,000 cases annually, or 9 to 10 cardiac arrests per 1,000 admissions. In contrast, data from the UK National Cardiac Arrest Audit between 2011 and 2013 estimated an incidence of 1.6 in-hospital cardiac arrests per 1,000 admissions in the United Kingdom (Nolan et al., 2014).

According to GWTG-R registry data, the mean age of patients experiencing in-hospital cardiac arrest in the United States is 66 years, with men comprising 58% of cases. The most common presenting rhythms (81%) are nonshockable, such as asystole or pulseless electrical activity. Approximately half of these events occur in hospital wards, while the remainder takes place in other locations, including intensive care units and operating rooms (Perman et al., 2016).

A review conducted in 2007 indicated that survival rates to hospital discharge varied from 0% to 42% across studies, with most large studies reporting survival rates of approximately 20%. Survival rates have improved over the past two decades, and by 2017, the GWTG-R registry reported a 25% survival rate to hospital discharge. Among those discharged alive, 85% had favorable neurological outcomes, defined as a cerebral performance category of 1 or 2. Data from the United Kingdom from 2011 to 2013 reported an 18% survival rate to hospital discharge, while national registries in Denmark and Sweden report 30-day survival rates of approximately 30%.

A 2018 systematic review encompassing more than 1 million in-hospital cardiac arrests and 39 studies published between 1992 and 2016 reported an overall 1-year survival rate of 13%. This review also highlighted significant variability across studies and noted an upward trend in 1-year survival over time. Among elderly patients (≥65 years) in the United States who survived to hospital discharge, 59% were alive after one year, with 34% avoiding hospital readmission during that period.

Variability in the incidence and survival rates of in-hospital cardiac arrest across different countries likely reflects several factors, including (1) variations in definitions used to identify in-hospital cardiac arrest, (2) differences in the proportion of cardiac arrests captured by various registries, (3) disparities in patient populations, (4) cultural differences regarding cardiopulmonary resuscitation (CPR), do-not-resuscitate (DNR) orders, and withdrawal of care, and (5) variations in treatment provided during and after cardiac arrest. Consequently, comparisons between countries or registries should be made cautiously.

Causes of Cardiac Arrest

Traditionally, the causes of cardiac arrest have been categorized as either cardiac or non-cardiac. Patients without an obvious cause are typically classified as having a cardiac cause, and discrepancies often exist between clinical and postmortem diagnoses, leading to uncertainty in determining the causes of cardiac arrest. Cardiac etiologies, such as myocardial infarction, arrhythmia, or heart failure, are the most common, accounting for approximately 50% to 60% of cases. Respiratory insufficiency represents the second most frequent cause, with a prevalence ranging from 15% to 40%. The median duration of hospitalization before cardiac arrest is one to two days, with respiratory insufficiency being more prevalent as the cause when hospitalization duration is longer. Neurological causes of cardiac arrest are uncommon in the in-hospital setting (Legriel et al., 2018).

Determining the cause of cardiac arrest serves several purposes. During resuscitation, guidelines emphasize identifying potential reversible causes, categorized into the "4 Hs and 4 Ts" framework (Box). While not all categories (e.g., hypothermia) are relevant in the in-hospital setting, most in-hospital cardiac arrests can be classified using this approach. Identifying the cause may improve outcomes by tailoring post-cardiac arrest treatment to address post-cardiac arrest organ dysfunction, which is influenced by the underlying cause. Moreover, prevention of cardiac arrest is best achieved by addressing its underlying mechanisms. For example, QT interval-prolonging drugs prescribed during hospitalization can lead to arrhythmias, while the use of opioids or sedatives may contribute to respiratory insufficiency (Overdyk et al., 2016).

Another potentially preventable cause of cardiac arrest is sepsis, with the prevalence of preexisting sepsis in patients with in-hospital cardiac arrest ranging from 13% to 27%. Organ failure resulting from sepsis contributes to several potential causes of arrest, including circulatory failure, respiratory insufficiency, and metabolic disturbances.

Prevention of Cardiac Arrest

Unlike out-of-hospital settings, in-hospital environments provide opportunities for continuous observation of a patient’s clinical condition before cardiac arrest occurs. Clinical deterioration is commonly observed prior to in-hospital cardiac arrest, and many of these events are deemed preventable based on retrospective reviews. As a result, the prevention of cardiac arrest has been incorporated as the first link in the Chain of Survival for in-hospital cardiac arrest in the 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (Kronick et al., 2015).

Key components of prevention include identifying at-risk patients and implementing early interventions to prevent clinical deterioration leading to cardiac arrest. Risk identification may involve early warning systems triggered by specific vital sign abnormalities, scoring systems based on multiple criteria, or clinical staff concern. However, existing prediction models often lack the optimal sensitivity and specificity needed to accurately identify at-risk patients and may be constrained by differences in hospital system logistics.

Although rapid response team interventions are generally supported by the literature, the evidence base is limited due to a lack of rigorous randomized clinical trials and the heterogeneity of hospital systems. Nonetheless, hospitals should establish a two-part system to prevent cardiac arrest, comprising (1) mechanisms to identify at-risk or deteriorating patients, which require appropriate education, monitoring, and recognition, and (2) the implementation of interventional responses, such as rapid response teams.

Treatment During Cardiac Arrest

The primary interventions during cardiac arrest are chest compressions, ventilation, and early defibrillation when indicated. Prompt initiation of cardiopulmonary resuscitation (CPR) has been linked to better outcomes in both out-of-hospital and in-hospital cardiac arrests. Consequently, CPR training has been a mandatory requirement for hospital personnel in many healthcare systems for decades, enabling rapid recognition and management of cardiac arrest before the cardiac arrest team arrives. Improved quality of chest compressions and CPR overall has been correlated with better outcomes in cardiac arrest patients, making the optimization of CPR quality a critical goal (Wallace et al., 2013).

Although only about 20% of in-hospital cardiac arrest cases present with an initial shockable rhythm, rapid defibrillation has been associated with improved outcomes for these patients. The benefit of automated external defibrillators (AEDs), which have significantly improved outcomes in the out-of-hospital setting remains unclear in in-hospital environments (Chan et al., 2010).

Evidence supporting the efficacy of pharmacological interventions during in-hospital cardiac arrest is limited. Current guidelines recommend epinephrine and amiodarone, which improve short-term outcomes in out-of-hospital cardiac arrest, but there is minimal evidence of significant neurological improvement associated with their use. Given the differences between in-hospital and out-of-hospital cardiac arrests particularly the earlier administration of medications in in-hospital events, it is uncertain whether findings from studies on out-of-hospital cardiac arrest apply to the in-hospital context. Early administration of epinephrine has shown better outcomes for patients with nonshockable rhythms, whereas early administration in shockable rhythms has been linked to worse outcomes. The combination of vasopressin and methylprednisolone during in-hospital cardiac arrest has demonstrated promising results in two small randomized clinical trials. However, due to insufficient evidence, this drug combination is not currently recommended in US or European guidelines (Link et al., 2015).

Airway management is another critical component of advanced life support during cardiac arrest. While endotracheal intubation has traditionally been considered the standard approach to ensure effective ventilation and oxygenation, emerging evidence from out-of-hospital and in-hospital settings suggests that alternative methods, such as bag-valve-mask ventilation or supraglottic airway devices, may be equally or more effective. The optimal strategy for ventilation and oxygenation likely depends on the clinical context of the patient.

Extracorporeal circulation during CPR is being evaluated for its role in cardiac arrest and may be beneficial in specific in-hospital scenarios, such as cardiac arrest in patients who recently underwent cardiac surgery. Although some reports have shown favorable outcomes, the evidence remains limited due to the observational nature of most studies. Carefully selected patients may benefit from extracorporeal circulation, but resource allocation must be balanced against potential clinical advantages.

Treatment After Cardiac Arrest

Post-cardiac arrest management primarily focuses on addressing the underlying cause, providing hemodynamic and respiratory support, and implementing neuroprotective strategies.

The conditions preceding and during cardiac arrest influence the severity of post-cardiac arrest syndrome and the required interventions. For example, a patient presenting with acute coronary syndrome who develops ventricular fibrillation promptly treated with defibrillation may require cardiac-specific treatment without neuroprotection. Conversely, a patient with prolonged cardiac arrest and ischemia-reperfusion injury may suffer multiorgan dysfunction and require extensive interventions.

A distinguishing feature of in-hospital cardiac arrest is that it often results from progressively worsening conditions, in contrast to the sudden and unpredictable nature of out-of-hospital arrests. Despite ongoing debate, targeted temperature management (TTM) at 32°C to 36°C for a minimum of 24 hours remains the primary neuroprotective intervention following out-of-hospital cardiac arrest. To date, no randomized trials have evaluated TTM in in-hospital cardiac arrest, and data are limited to observational studies or extrapolated from out-of-hospital research. The largest observational study on TTM in in-hospital cardiac arrest (N = 26,183) associated the intervention with worse outcomes, although coma status was not accounted for, potentially biasing the results. While future studies are necessary, current American Heart Association guidelines recommend TTM for at least 24 hours (Callaway et al., 2015).

Additional neuroprotective strategies, supported by indirect observational evidence, include minimizing supplemental oxygen when oxygen levels are adequate and maintaining normocapnia. Observational studies investigating the use of low tidal-volume ventilation in cardiac arrest patients have yielded mixed results. However, since cardiac arrest patients rarely die from refractory respiratory failure the effectiveness of ventilation-based interventions may be limited (Witten et al., 2019).

Hemodynamic management remains crucial, though no specific differences in post-cardiac arrest care compared to other critically ill patients have been identified. Factors such as preexisting disease, underlying diagnoses, and myocardial stunning from ischemia-reperfusion contribute to the hemodynamic profile of post-cardiac arrest patients. TTM may affect hemodynamics, as a small 2002 trial reported lower heart rates, increased systemic vascular resistance, and slightly reduced cardiac output in patients receiving TTM. A 2015 analysis comparing TTM at 33°C versus 36°C observed higher vasopressor dosages and lactate levels in the 33°C group. Therefore, maintaining higher temperatures (e.g., 36°C) may be preferable if TTM adversely affects hemodynamics (Annborn et al., 2014).

TTM at 33°C should likely be avoided in patients with sepsis or septic shock or bacterial meningitis as recent studies suggest worse outcomes in these groups with this intervention.

Characteristics Related to Outcomes

Numerous patient and event-related characteristics influence the clinical outcomes of in-hospital cardiac arrest. Some characteristics, such as age, sex, and preexisting conditions, are immutable, while others, like time to drug administration and quality of monitoring, are modifiable and have been the focus of quality-improvement initiatives. Although factors such as advanced age are strongly predictive of outcomes, no single factor is sufficient to estimate prognosis following cardiac arrest.

Increasing age is generally associated with reduced survival rates following cardiac arrest, particularly among patients aged 70 years and older (Chan et al., 2012). The influence of other demographic factors, such as sex and race, is less definitive. While men have a higher incidence of in-hospital cardiac arrest, outcomes for men and women are comparable. However, women in the childbearing age range (15–44 years) may experience better outcomes than men in the same age group. Studies exploring the relationship between race and outcomes have revealed that Black and Hispanic patients exhibit lower rates of neurological recovery and survival compared to White patients. Data from the GWTG-R registry demonstrate that racial disparities in outcomes have narrowed over time, with the survival gap between Black and White patients decreasing from 4.5% in 2000 to 1.8% in 2014. Variability in risk factor distribution and differences in patient- and hospital-level care during and after cardiac arrest may account for these racial disparities.

The presence of preexisting medical and surgical conditions significantly affects survival following in-hospital cardiac arrest. Conditions such as malignancy, sepsis, poor functional status before arrest, pneumonia, hypotension, renal dysfunction, and hepatic dysfunction are associated with poor survival rates. On the other hand, cardiac arrests caused by acute myocardial infarction are linked to better survival outcomes compared to arrests with other causes.

Factors related to early recognition of cardiac arrest, such as the event being witnessed or occurring in a monitored location are associated with improved survival rates. The relationship between monitoring or location and outcomes is complex due to the differing characteristics of patient populations across various locations.

Two of the strongest predictors of outcomes are the presenting rhythm and the duration of the cardiac arrest. Patients with a shockable rhythm have survival rates to hospital discharge that are two to three times higher than those with non-shockable rhythms. This disparity may partly result from the availability of more effective treatments, such as defibrillation, in the shockable group, as well as differences in underlying patient characteristics and preexisting conditions influencing the rhythm at presentation. Survival likelihood declines markedly with increasing durations of CPR (Rohlin et al., 2018).

Prognostication

During Cardiac Arrest

Determining when to terminate CPR during cardiac arrest remains a significant challenge due to the limited guidance provided by current guidelines. While longer durations of resuscitation are associated with poorer outcomes, survival with good neurological recovery is still possible after prolonged CPR. Research by Goldberger et al. suggests that hospitals with longer average durations of CPR achieve better outcomes, indicating that resuscitation efforts may be prematurely discontinued at some facilities (Goldberger et al., 2012).

Observational studies have shown that cardiac standstill observed via point-of-care cardiac ultrasonography is associated with a very low likelihood of survival. However, concerns exist about interrater variability in interpreting ultrasound images and the potential for ultrasonography to interfere with CPR. Similarly, end-tidal carbon dioxide levels below 10 mm Hg after 20 minutes of CPR are strongly linked to poor outcomes (Paiva et al., 2018). However, these findings should be interpreted cautiously, as studies are often unblinded, and results may reflect a self-fulfilling prophecy where resuscitation efforts are halted based on these observations. Neither cardiac ultrasonography nor end-tidal carbon dioxide levels should be used in isolation but may be considered alongside factors such as the initial rhythm and CPR duration.

After Cardiac Arrest

Current prognostication guidelines primarily rely on data from out-of-hospital cardiac arrest cases and focus on neurological outcomes. While two-thirds of out-of-hospital cardiac arrest survivors admitted to intensive care units die from neurological causes, neurological death occurs in only one-quarter of in-hospital cardiac arrest patients, where multiorgan dysfunction is the predominant cause of mortality. In-hospital cardiac arrests are often witnessed, resulting in shorter times from arrest to CPR initiation and return of spontaneous circulation, which may contribute to the lower incidence of neurological injury in these cases. These differences leave clinicians with limited guidance on predicting overall survival or survival with good neurological or functional recovery after in-hospital cardiac arrest.

Chan et al. developed a scoring system to estimate survival to hospital discharge with favorable neurological outcomes for patients who achieve return of spontaneous circulation after in-hospital cardiac arrest. This externally validated scoring system is based on 11 parameters available immediately after the arrest and effectively categorizes patients based on their likelihood of survival (Wang et al., 2018). Although this scoring system can guide discussions about care goals for critically ill post-arrest patients, it cannot reliably identify individuals with no or very low chances of survival (Chan et al., 2012). Therefore, the score should not be used as the sole criterion for decisions regarding withdrawal of care.

Treatment Recommendations

Treatment recommendations for patients experiencing in-hospital cardiac arrest with presumed severe neurological impairment are primarily informed by studies involving out-of-hospital cardiac arrest cases (Callaway et al., 2015). A significant recommendation is to delay neuroprognostication, particularly when targeted temperature management is employed, as sedatives and neuromuscular blockade may exhibit slower metabolism. Studies have shown that delayed awakening, defined as occurring more than 48 hours after sedation cessation, is common in cardiac arrest patients. In one study, 22% of patients who remained comatose 7 days post-arrest achieved favorable neurological outcomes at 6 months. The American Heart Association advises deferring neuroprognostication based on physical examination findings until at least 72 hours after return of spontaneous circulation or rewarming (in cases of targeted temperature management) and potentially longer if sedative or neuromuscular blockade effects persist.

Certain clinical findings are most predictive of poor neurological outcomes. These include absent pupillary light reflexes, absent corneal reflexes after 72 hours, and status myoclonus (characterized by continuous, prolonged, and generalized myoclonus) occurring within 72 to 120 hours post-arrest. Other signs, such as extensor motor responses and intermittent myoclonus, are less predictive and should not be solely relied upon. On electroencephalography, persistent burst suppression following rewarming and nonreactivity are indicators of poor outcomes. Similarly, the absence of somatosensory evoked potentials at 72 hours is predictive of unfavorable results. Imaging studies, including evidence of cerebral edema on early computed tomography and restricted diffusion on magnetic resonance imaging between 2 to 6 days post-return of spontaneous circulation, may assist in prognostication but do not exclude the possibility of a favorable neurological outcome. Biomarkers such as neuron-specific enolase and S100 calcium-binding protein B provide insight into the extent of neurological injury but are insufficient predictors of outcomes when used in isolation, although they may add value when combined with other prognostic indicators.

Evidence supporting any single prognostic tool following in-hospital cardiac arrest remains limited. Instead, a comprehensive, multifaceted approach that evaluates neurological prognosis in conjunction with ongoing organ failure is preferred. Data on neurological prognosis and organ failure, when integrated with patient and cardiac arrest characteristics, can guide clinical decision-making.

Quality Improvement

Various strategies and quality improvement initiatives have been proposed to enhance outcomes following in-hospital cardiac arrest. For instance, the GWTG-R registry tracks multiple quality metrics, including the proportion of cardiac arrests that are monitored or witnessed, time to critical interventions (such as defibrillation for shockable rhythms and epinephrine administration for nonshockable rhythms), and confirmation of appropriate airway placement. Observational studies have demonstrated that prolonged participation in the GWTG-R registry correlates with improved quality of care and higher rates of return of spontaneous circulation. Adherence to specific performance measures is also linked to better outcomes (Anderson et al., 2016).

Other components of cardiac arrest care, such as staff training, enhanced monitoring, and optimizing cardiac arrest team composition, are additional areas for quality improvement. Hospitals are encouraged to participate in national registries to monitor and improve the quality of care for patients with in-hospital cardiac arrest, as such participation facilitates benchmarking and targeted improvement efforts.

Conclusion

Nurses and respiratory therapists play a pivotal role in the management of in-hospital cardiac arrest, from early detection and rapid response to implementing quality improvement measures that enhance patient outcomes. Their expertise in recognizing clinical deterioration and initiating timely interventions is critical in reducing mortality and improving survival rates. Despite advancements in guidelines and treatment strategies, challenges remain in areas such as prognostication and standardization of care practices. A comprehensive, multidisciplinary approach, with nurses as integral team members, is essential to addressing these challenges and fostering better outcomes for patients experiencing cardiac arrest in hospital settings. Continuous education, participation in quality-improvement registries, and adherence to evidence-based practices further empower nurses to deliver exceptional care and drive meaningful improvements in cardiac arrest management.

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